

| National Imaging Associates, Inc.* | |
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| Clinical guidelines CHEST (Thorax) CT | Original Date: September 1997 |
| CPT Codes: 71250, 71260, 71270, 71271 | Last Revised Date: April <u>March</u> 202 21 |
| Guideline Number: NIA_CG_020 | Implementation Date: January 202 32 |

This Chest CT Guideline covers CPT codes 71250 (CT chest without contrast), CT chest with contrast (71260), CT chest without and with contrast (71270) and Low dose CT scan (LDCT) for lung cancer screening (71271). **When the case is listed as CT chest in BBI and the clinical scenario or request for LDCT in the office notes meets appropriate use criteria for a LDCT, the LDCT is approvable due to these overlapping CPT codes. Reprocessing of the case to a separate LDCT request is not required.**

INDICATIONS FOR CHEST CT

For Annual Lung Cancer Screening

The use of low-dose, non-contrast spiral (helical) multi-detector CT imaging as an annual screening technique for lung cancer is considered **medically necessary ONLY** when used to screen for lung cancer for certain high-risk **asymptomatic** individuals when **ALL** of the following criteria are met¹ ~~(USPSTF, 2021)~~:

- Individual is between 50-80 years of age; AND
- There is at least a 20 pack-year history of cigarette smoking; AND
- If the individual is a former smoker, that individual had quit smoking within the previous 15 years

Nodule on Initial LDCT²

~~(Wood, 2018)~~

- If multiple nodules, the largest and type is used for decision
- Follow-up with LDCT as per Lung-Rads criteria^{3,4} ([Table 1](#))

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1—Chest (Thorax) CT

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Table 1: Lung-RADS® Assessment Categories⁵ ~~(ACR, 2019)~~

| Category Descriptor | Lung-RADS Score | Findings | Management |
|--|-----------------|---|---|
| Incomplete | 0 | Prior chest CT examination(s) being located for comparison Part or all of lungs cannot be evaluated | Additional lung cancer screening CT images and/or comparison to prior chest CT examinations is needed |
| Negative No nodules and definitely benign nodules | 1 | No lung nodules Nodule(s) with specific calcifications: complete, central, popcorn, concentric rings and fat containing nodules | Continue annual screening with LDCT in 12 months |
| Benign Appearance or Behavior Nodules with a very low likelihood of becoming a clinically active cancer due to size or lack of growth | 2 | Perifissural nodule(s) (See Footnote 11) < 10 mm (524 mm ³) | |
| | | Solid nodule(s): < 6 mm (< 113 mm ³) new < 4 mm (< 34 mm ³) | |
| | | Part solid nodule(s): < 6 mm total diameter (< 113 mm ³) on baseline screening | |
| | | Non solid nodule(s) (GGN): < 30 mm (< 14137 mm ³) OR ≥ 30 mm (≥ 14137 mm ³) and unchanged or slowly growing | |
| | | Category 3 or 4 nodules unchanged for ≥ 3 months | |
| Probably Benign Probably benign finding(s) - short term follow up suggested; includes nodules with a low likelihood of becoming a clinically active cancer | 3 | Solid nodule(s): ≥ 6 to < 8 mm (≥ 113 to < 268 mm ³) at baseline OR new 4 mm to < 6 mm (34 to < 113 mm ³) Part solid nodule(s) ≥ 6 mm total diameter (≥ 113 mm ³) with solid component < 6 mm (< 113 mm ³) OR new < 6 mm total diameter (< 113 mm ³) Non solid nodule(s) (GGN) ≥ 30 mm (≥ 14137 mm ³) on baseline CT or new | 6 month LDCT |
| Suspicious Findings for which additional diagnostic testing is recommended | 4A | Solid nodule(s): ≥ 8 to < 15 mm (≥ 268 to < 1767 mm ³) at baseline OR growing < 8 mm (< 268 mm ³) OR new 6 to < 8 mm (113 to < 268 mm ³) Part solid nodule(s): ≥ 6 mm (≥ 113 mm ³) with solid component ≥ 6 mm to < 8 mm (≥ 113 to < 268 mm ³) OR with a new or growing < 4 mm (< 34 mm ³) solid component Endobronchial nodule | 3 month LDCT; PET/CT may be used when there is a ≥ 8 mm (≥ 268 mm ³) solid component |
| Very Suspicious Findings for which additional diagnostic testing and/or tissue sampling is recommended | 4B | Solid nodule(s) ≥ 15 mm (≥ 1767 mm ³) OR new or growing, and ≥ 8 mm (≥ 268 mm ³) Part solid nodule(s) with: a solid component ≥ 8 mm (≥ 268 mm ³) OR a new or growing ≥ 4 mm (≥ 34 mm ³) solid component | Chest CT with or without contrast, PET/CT and/or tissue sampling depending on the *probability of malignancy and comorbidities. PET/CT may be used when there is a ≥ 8 mm (≥ 268 mm ³) solid component. For new large nodules that develop on an annual repeat screening CT, a 1 month LDCT may be recommended to address potentially infectious or inflammatory conditions |
| | 4X | Category 3 or 4 nodules with additional features or imaging findings that increases the suspicion of malignancy | |
| Other Clinically Significant or Potentially Clinically Significant Findings (non lung cancer) | S | Modifier - may add on to category 0-4 coding | As appropriate to the specific finding |

Incidental Lung Nodules⁶

(Bueno, 2018)

- Incidental pulmonary nodules detected on a nonscreening Chest CT (use [Fleischner Table](#))
 - Age \geq 35 years old – use Fleischner table
 - Excludes
 - Lung cancer screening (see [lung cancer screening](#) guidelines above)
 - History of primary cancer (imaging follow-up for surveillance is 3 months to detect interval nodule growth)
 - Immunosuppression (may require a shorter follow-up, such as 1 month, if suspicion of fulminant infection)

Note: These should not be ordered as Low Dose CT

- **Incidental pulmonary nodules on non-chest CT**
 - Nodules >8 mm or those with very suspicious features need further Chest CT as early as possible
 - Nodules ≤ 8 mm should follow the Fleischner table

Incidental pulmonary nodules on chest x-ray that are indeterminate (not typical of granulomatous disease) as noted by the radiologist. No time delay between the chest x-ray and the subsequent Chest CT needed).

Table 2: 2017 Fleischner Society Guidelines for Management of Incidentally Detected Pulmonary Nodules (Bueno, 2018)

Table 2: 2017 Fleischner Society Guidelines for Management of Incidentally Detected Pulmonary

| A: Solid Nodules* | | | | |
|----------------------|---|--|---|---|
| Nodule Type | Nodules <6 mm (<100 mm ³) | Nodules 6–8 mm (100–250 mm ³) | Nodules >8 mm (>250 mm ³) | Comments |
| Single | | | | |
| Low risk | No routine follow-up | CT at 6–12 mo, then consider CT at 18–24 mo | Consider CT at 3 mo, PET/CT, or tissue sampling | Nodules <6 mm do not require routine follow-up in low-risk patients (recommendation 1A) |
| High risk | Optional CT at 12 mo | CT at 6–12 mo, then at 18–24 mo | Consider CT at 3 mo, PET/CT, or tissue sampling | Certain patients at high risk with suspicious nodule morphology, upper lobe location, or both may warrant 12-mo follow-up (recommendation 1A) |
| Multiple | | | | |
| Low risk | No routine follow-up | CT at 3–6 mo, then consider CT at 18–24 mo | CT at 3–6 mo, then consider CT at 18–24 mo | Use most suspicious nodule as guide to management; follow-up intervals may vary according to size and risk (recommendation 2A) |
| High risk | Optional CT at 12 mo | CT at 3–6 mo, then at 18–24 mo | CT at 3–6 mo, then at 18–24 mo | Use most suspicious nodule as guide to management; follow-up intervals may vary according to size and risk (recommendation 2A) |
| B: Subsolid Nodules* | | | | |
| Nodule Type | Nodules <6 mm (<100 mm ³) | Nodules ≥6 mm (≥100 mm ³) | | Comments |
| Single | | | | |
| Ground glass | No routine follow-up | CT at 6–12 mo to confirm persistence, then CT every 2 y until 5 y | | For certain suspicious nodules <6 mm, consider follow-up at 2 y and 4 y; if solid component(s) develops or growth occurs, consider resection (recommendations 3A and 4A) |
| Partly solid | No routine follow-up | CT at 3–6 mo to confirm persistence; if lesion is unchanged and solid component remains <6 mm, annual CT should be performed for 5 y | | In practice, partly solid nodules cannot be defined as such until they are ≥6 mm, and nodules <6 mm usually do not require follow-up; persistent partly solid nodules with a solid component ≥6 mm should be considered highly suspicious (recommendations 4A–4C) |
| Multiple | | | | |
| | CT at 3–6 mo; if lesion is stable, consider CT at 2 y and 4 y | CT at 3–6 mo; subsequent management based on the most suspicious nodule(s) | | Multiple <6-mm pure GGNs [†] usually are benign, but consider follow-up at 2 y and 4 y in select patients at high risk (recommendation 5A) |

Nodules⁶ (Bueno, 2018)

Known Cancer⁷⁻⁹

(Carter, 2018; Hong, 2014; Lee, 2014)

- For follow-up intervals for malignancies¹⁰ (NCCN, 2019)
- Cancer staging (includes unknown primary)
- Cancer restaging

- Suspicious signs or symptoms of recurrence
- Suspected cancer based on prior imaging¹¹ ~~(Greco, 2012)~~

Chest Mass (non-lung parenchymal)¹²

~~(Mullan, 2011)~~

(Preference should be given to MRI over chest CT for chest wall mass)

- Mass or lesion, including lymphadenopathy, after non-diagnostic initial imaging
- Thymoma screening in Myasthenia Gravis patients¹³ ~~(Kumar, 2015)~~

Interstitial Lung Disease^{14,15}

~~(ACR, 2019; Vij, 2013)~~

- Suspected or known based on restrictive pattern pulmonary function test or signs or symptoms after initial chest x-ray
- Signs or symptoms unresponsive to treatment such as:
 - Shortness of breath
 - Persistent dyspnea
 - Persistent cough
- Monitoring treatment response of known interstitial lung disease
- Patients with known collagen vascular disease¹⁶ ~~(Antoniou, 2009)~~
- Guidance in selection of the most appropriate site for biopsy of diffuse lung disease¹⁷ ~~(ACR, 2015)~~

Chronic Cough (> 8 weeks) and chest x-ray completed¹⁸

~~(Turner, 2016)~~

- After evaluation for other causes and failed treatment for those diagnosed with:
 - Asthma
 - Gastroesophageal Reflux Disease
 - Discontinuation of ACE inhibitors
 - Postnasal drip
- Clinical concern for bronchiectasis

Tuberculosis (TB)¹⁹

~~(Ko, 2018)~~

- Known or suspected tuberculosis and initial chest x-ray done

Infection Follow-up Imaging

- Abscess, empyema, or pleural effusions on chest x-ray²⁰ ~~(Dean, 2016)~~
- For evaluation of non-resolving pneumonia or inflammatory disease documented by **at least two** imaging studies:
 - Unimproved with 4 weeks of antibiotic treatment; **OR**
 - Unresolved at 8 weeks^{21,22} ~~(Bryl, 2018; Little, 2014)~~

Pneumothorax on Chest X-ray²³

~~(Melamed, 2017)~~

Vocal Cord Paralysis on Endoscopic Exam²⁴

~~(Paquette, 2012)~~

- Neck and Chest CT is an approvable combo

Granulomatosis with Polyangiitis (Wegener's Granulomatosis)²⁵

~~(Li, 2018)~~

Vascular Disease

- CT chest is not preferred study for vascular disease, CTA should be considered. See Chest CTA guideline.
- Chest CT can be used to detect and follow-up thoracic aortic aneurysms. See Background section.

Suspected Pulmonary Embolism (PE)²⁶

- Chest CT not approvable for PE

Congenital Malformations

- Thoracic malformation on chest x-ray²⁷ ~~(Ferreira, 2015)~~
- Congenital Heart Disease with pulmonary hypertension²⁸ ~~(Pascall, 2018)~~

Hemoptysis after x-ray completed^{29,30}

~~(ACR, 2019; Ketai, 2014)~~

Pre-operative/procedural evaluation

- Pre-operative evaluation for a planned surgery or procedure
- Pre-operative evaluation for Electromagnetic Navigation Bronchoscopy³¹

Post-operative/procedural evaluation

- Post-surgical follow-up when records document medical reason requiring additional imaging

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- ~~Pre-operative evaluation for Electromagnetic Navigation Bronchoscopy³¹ (Khan, 2016)~~

Chest Wall Pain (after initial evaluation with chest x-ray and/or rib films)³²

~~(Winzenberg, 2015)~~

- History of known or suspected cancer
- Signs and symptoms of infection, such as:
 - Accompanying fever
 - Elevated inflammatory markers
 - Known infection at other sites

Chest CT and COVID-19 (Coronavirus)

- Acute COVID

- Imaging is not indicated in patients suspected of having coronavirus disease (COVID-19) and mild clinical features unless they are at risk for disease progression
- Imaging is indicated in a patient with COVID-19 and worsening respiratory status
- In a resource-constrained environment, imaging is indicated for medical triage of patients suspected of having COVID-19 who present with moderate-to-severe clinical features and a high pretest probability of disease
- Long (Chronic) COVID (See Overview)³³:
 - ~~Prior history of Covid with hypoxia or impaired lung function on follow-up³³ (Rubin, 2020)~~
 - ~~Restricted diffusion on Pulmonary Function Test (would need a HRCT – High Resolution CT)~~
 - ~~Low oxygen saturation and a Chest x-ray was done~~
- - Prior history of Covid with hypoxia or impaired lung function of follow-up³³
 - Restricted diffusion on Pulmonary Function Test (would need a HRCT – High Resolution CT)
 - Low oxygen saturation and a Chest x-ray was done
 - Known fibrosis with continued symptoms

Combination of studies with Chest CT

- **Abdomen CT/Pelvis CT/Chest CT/Neck MRI/Neck CT with MUGA** – known tumor/cancer for initial staging or evaluation before starting chemotherapy or radiation treatment
- **Neck and Chest CT** - Neck and Chest CT is an approvable combo with vocal cord paralysis and concern for recurrent laryngeal nerve lesion

BACKGROUND

Computed tomography (CT) scans provide greater clarity than regular x-rays and are used to further examine abnormalities found on chest x-rays. They may be used for detection and evaluation of various disease and conditions in the chest, e.g., tumor, inflammatory disease, vascular disease, congenital abnormalities, trauma, and symptoms such as hemoptysis.

OVERVIEW

LDCT for Lung Cancer Screening - Screening should be discontinued once a person has not smoked for 15 years or develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery.

CT and Aneurysm

- Initial evaluation of aneurysm³⁴⁻³⁶ ~~(Erbel, 2014; Hannuksela, 2015; Hiratzka, 2010)~~
 - Echocardiogram shows aneurysm

- Echocardiogram inconclusive of proximal aorta and first-degree relative with thoracic aneurysm
- Chest x-ray shows possible aneurysm
- Follow-up after established Thoracic Aneurysm (above these sizes surgery is usually recommended)³⁴⁻³⁶ ~~(Erbel, 2014; Hannuksela 2015; Hiratzka, 2010)~~
 - Aortic Root or Ascending Aorta
 - 3.5 to 4.5 Annual
 - 4.5 to 5.4 Every 6 months
 - Genetically mediated (Marfans syndrome, Aortic Root or Ascending Aorta)
 - 3.5 to 4.0 Annual
 - 4.0 to 5.0 Every 6 months
 - Descending Aorta
 - 4.0 to 5.0 Annual
 - 5.0 to 6.0 Every 6 months

CT and Interstitial Lung Disease¹⁴ ~~(ACR, 2019)~~ — Radiography of the chest is usually appropriate for the initial imaging of patients who undergo screening and surveillance for lung disease when occupational exposure is present.

Costochondritis³⁷ ~~(Proulx, 2009)~~ — If physical exam findings are suggestive of costochondritis but the pain is persistent despite conservative care, it should be kept in mind that costochondritis can be recurrent and persistent. It is associated with fibromyalgia. Chest CT should be considered if the findings are not consistent with typical costochondritis, such as fever or elevated inflammatory markers, suggestive of infection or a suspicion of cancer based on history or current findings.

CT for Management of Hemoptysis^{29,30} — High-resolution CT (HRCT) is useful for estimating the severity of hemoptysis, localizing the bleeding site and determining the cause of the bleeding. Its results can be related to the severity of bleeding. The volume of expectorated blood and the amount of blood that may be retained within the lungs without being coughed up are important. HRCT is a way to evaluate the amount of bleeding and its severity. It may also help in the localization of bleeding sites and help in detecting the cause of bleeding.

CT and Solitary Pulmonary Nodules — Solitary Pulmonary nodules are abnormalities that are solid, semisolid and non-solid; another term to describe a nodule is focal opacity. CT makes it possible to find smaller nodules and contrast-enhanced CT is used to differentiate benign from malignant pulmonary modules. When a nodule is increasing in size or has spiculated margins or mixed solid and ground-glass attenuation, malignancy should be expected. Patients who have pulmonary nodules and who are immunocompromised may be subject to inflammatory processes.

CT and Empyema — Contrast-enhanced CT used in the evaluation of the chest wall may detect pleural effusion and differentiate a peripheral pulmonary abscess from a thoracic empyema. CT

may also detect pleural space infections and help in the diagnosis and staging of thoracic empyema.

CT and Rib fractures³⁸ ~~-(ACR, 2018)-~~ Chest CT may be useful for characterizing a pathologic fracture, and some features may be helpful in differentiating a primary malignant tumor of bone from metastasis. CT may also be helpful to search for a primary malignancy in patients with a suspected pathologic fracture; however, there is no strong indication that CT serves a significant use as the initial imaging modality to detect pathologic rib fractures.

CT and Occupational Lung Disease¹⁴ ~~-(ACR, 2019)-~~ The chest radiograph and CT are complementary in the initial workup of suspected occupational lung disease. When patients with occupational exposures present with respiratory symptoms, chest radiography serves as the primary function of excluding alternative diagnoses, such as infectious pneumonia or pulmonary edema, with HRCT findings offering the best characterization of lung disease.

CT and Tuberculosis ~~—~~ “The chest radiograph is usually the first study performed in patients suspected of having TB. Although frontal and lateral radiographs are often performed in this setting, it has been shown that the lateral radiograph does not improve the detection of findings related to TB. In those with signs or symptoms of disease, the radiographic pattern of upper-lobe or superior-segment lower-lobe fibrocavitary disease in the appropriate clinical setting is sufficient to warrant respiratory isolation and sputum culture for definitive diagnosis. Using radiographs in combination with clinical evaluation results in a high sensitivity for the diagnosis but a relatively low specificity for both latent and active TB. In addition, radiographs may reveal ancillary findings of TB such as pleural effusion or spondylitis. For immunocompromised hosts, particularly those with a low CD4 count, computed tomography (CT) should be considered ~~-(ACR, 2016)-~~.”³⁹ CT may be of value in the severely immunocompromised patient with a normal or near-normal radiograph by revealing abnormal lymph nodes or subtle parenchymal disease. Finally, CT may also have a role in identifying patients with latent TB who will be at risk for reactivation disease.

CT and Superior Vena Cava (SVC) Syndrome – SVC is associated with cancer, e.g., lung, breast and mediastinal neoplasms. These malignant diseases cause invasion of the venous intima or an extrinsic mass effect. Adenocarcinoma of the lung is the most common cause of SVC. SVC is a clinical diagnosis with typical symptoms of shortness of breath along with facial and upper extremity edema. Computed tomography (CT), often the most readily available technology, may be used as confirmation and may provide information including possible causes.

CT and Family History of Lung Cancer⁴⁰ ~~-(Leverdos, 2019)-~~ Family history is equally important. Individuals with a family history of lung cancer among first-degree relatives have been consistently shown to have a two-fold higher risk of developing lung cancer themselves. Those with multiple affected family members diagnosed at younger age appear to be at greater risk.

CT and COVID-19 – Chest CT is not recommended by the American College of Radiology either as a screening test for COVID-19 or as a first-line test to diagnose COVID-19.⁴¹ The chest

imaging pattern is nonspecific to COVID-19 and may be dependent on radiographic interpretation.⁴²⁻⁴⁸ The CDC differentiates long COVID—also known as long-haul COVID, post-acute COVID-19, long-term effects of COVID, or chronic COVID—as post-COVID conditions that “are a wide range of new, returning, or ongoing health problems people can experience four or more weeks after first being infected with the virus that causes COVID-19. Even people who did not have COVID-19 symptoms in the days or weeks after they were infected can have post-COVID conditions. These conditions can present as different types and combinations of health problems for different lengths of time.”⁴⁹

POLICY HISTORY

| Date | Summary |
|-------------------|---|
| <u>March 2022</u> | <ul style="list-style-type: none"> • <u>Clarified that no time delay required between chest x-ray and subsequent Chest CT for indeterminate incidental pulmonary nodules on chest x-ray (not typical of granulomatous disease)</u> • <u>Moved “Pre-operative evaluation for Electromagnetic Navigation Bronchoscopy” from Post-operative/procedural evaluation to Pre-operative/procedural evaluation</u> • <u>Added known fibrosis with continued symptoms to Long (Chronic) COVID</u> |
| April 2021 | <ul style="list-style-type: none"> • Added details for the following: incidental lung nodules as per the Fleischner Society; when not to use the Fleischner criteria; ordering of a Chest CT in the setting of coronavirus infection • Clarified when to use Lung Rads versus Fleischner criteria • Clarified pre-operative evaluation for a planned surgery or procedure • Added indications on what to image in setting of Covid 19 |
| March 10, 2021 | <ul style="list-style-type: none"> • Eliminated groupings (group 1 and group 2) for lung cancer screening and changed age of 55-80 years to 50-80 years; removed 30 pack year history of cigarette smoking (USPSTF 2021) |
| November 9, 2020 | <ul style="list-style-type: none"> • Replaced CPT code G0297 with 71271 |
| May 2020 | <ul style="list-style-type: none"> • For Annual Lung Cancer Screening: <ul style="list-style-type: none"> ○ Changed upper age limit from 77 to 80 yrs old ○ Added: <ul style="list-style-type: none"> • Age ≥ 50 years old; AND • ≥ 20 pack-year history of smoking; AND • Additional risk factors (other than second-hand smoke)* (see pg 2) <p><i>*Additional risk factors include: Survivors of lung cancer, lymphoma, cancers of the head and neck and bladder (smoking related cancers), first degree family members with a history of lung cancer, history of COPD or pulmonary fibrosis, radon exposure, retinoblastoma, Li Fraumeni syndrome, occupational exposure to arsenic, chromium,</i></p> |

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| | <p><i>asbestos, nickel, cadmium, beryllium, silica, diesel fumes, coal smoke and soot</i></p> <ul style="list-style-type: none"> Expanded lung nodules section to include: <ul style="list-style-type: none"> <i>Incidental pulmonary nodules detected on CT (use Fleischner Table)</i> <ul style="list-style-type: none"> <i>Age ≥ 35 years old – use Fleischner table</i> <i>Excludes lung cancer screening, patients with history of primary cancer, or immunosuppression (see specific section in current guideline)</i> <i>Incidental pulmonary nodules on non-chest CT:</i> <ul style="list-style-type: none"> <i>Nodules >8mm or those with very suspicious features need further Chest CT as early as possible</i> <i>Nodules ≤ 8mm should follow the Fleischner table</i> For Known Cancer, added: <i>For follow-up intervals for malignancies</i> For Lung or Chest Wall Mass: <ul style="list-style-type: none"> Added statement: <i>Preference should be given to MRI over chest CT for chest wall mass</i> <ul style="list-style-type: none"> Removed descriptive variables for ‘Mass with increased risk for malignancy’ including: <i>Fixation to adjacent tissues; Firm consistency; Size > 1.5 cm; Ulceration of overlying skin</i> Expanded Interstitial Lung Disease section to include: <ul style="list-style-type: none"> <i>Suspected or known based on restrictive pattern pulmonary function test or signs or symptoms after initial chest x-ray</i> <i>Signs or symptoms unresponsive to treatment such as:</i> <ul style="list-style-type: none"> <i>Shortness of breath</i> <i>Persistent dyspnea</i> <i>Persistent cough</i> <i>Patients with known collagen vascular disease</i> <i>Guidance in selection of the most appropriate site for biopsy of diffuse lung disease</i> Infection f/u imaging: added <i>inflammatory disease</i> Vocal Cord Paralysis on Endoscopic Exam: added ‘<i>Neck and Chest CT is an approvable combo</i>’ Removed Vascular Disease section and added the following: <ul style="list-style-type: none"> CT chest is not preferred study for vascular disease, CTA should be considered. See Chest CTA guideline. Chest CT can be used to detect and follow-up thoracic aortic aneurysms. Added indication: Chest Wall Pain <ul style="list-style-type: none"> <i>Chest Wall Pain (after initial evaluation with chest x-ray and/or rib films)</i> <ul style="list-style-type: none"> <i>History of known or suspected cancer</i> <i>Signs and symptoms of infection, such as:</i> <ul style="list-style-type: none"> <i>Accompanying fever</i> |
|--|--|

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|----------|--|
| | <ul style="list-style-type: none"> • <i>Elevated inflammatory markers</i> • <i>Known infection at other sites</i> • Added Neck and Chest CT combo study |
| May 2019 | <ul style="list-style-type: none"> • Added chart for f/u interval at which LDCT can be approved • Removed pulmonary embolism indication • Added statement about CPT codes • Separate diagnostic criteria for Thoracic aneurysm • Separated individual diagnoses. • Expanded criteria for chronic cough. • Updated references. |

REFERENCES

- American College of Chest Physicians (ACCP). Chest the 83rd annual meeting of the American College of Chest Physicians, Toronto, Ontario. 2017.
- American College of Radiology (ACR). ACR Appropriateness Criteria[®]. <https://acsearch.acr.org/list>. Published 2014.
- American College of Radiology (ACR). ACR Appropriateness Criteria[®]. <https://acsearch.acr.org/list>. Published 2018.
- American College of Radiology (ACR). ACR Appropriateness Criteria[®]. Acute Chest Pain—doi: <https://doi.org/10.1016/j.jacr.2017.02.027>.
- American College of Radiology (ACR). ACR Appropriateness Criteria[®]. Hemoptysis. Revised 2019. <https://acsearch.acr.org/docs/69449/Narrative/>.
- American College of Radiology (ACR). ACR Appropriateness Criteria[®]. Imaging of Possible Tuberculosis. 2016. <https://acsearch.acr.org/docs/3099187/Narrative/>.
- American College of Radiology (ACR). Lung—RADS Assessment Categories v1.1. 2019. <https://www.acr.org/ClinicalResources/ReportingandDataSystems/LungRads>.
- American College of Radiology (ACR). ACR Appropriateness Criteria[®]. Occupational Lung Diseases. Revised 2019. <https://acsearch.acr.org/docs/3091680/Narrative/>.
- American College of Radiology (ACR). ACR STR Practice Parameter for the Performance of High-Resolution Computed Tomography (HRCT) of the Lungs in Adults, Resolution 17. Revised 2015.
- Antoniou KM, Margaritopoulos G, Economidou E, et al. Pivotal clinical dilemmas in collagen vascular diseases associated with interstitial lung involvement. *Eur Resp J*. 2009; 33:882–96.
- Barman M. Acute aortic dissection. *Eur Soc Cardiol*. 2014 July 2; 12(25).
- Bryl B, Barlow E, Davies H. P182 Follow up chest X-rays (CXR) after community acquired pneumonia (CAP): Are they done and are they useful? *BMJ*. 2018; 73(4).
- Buono J, Landers L, Chung JH. Updated Fleischner Society guidelines for managing incidental pulmonary nodules: Common questions and challenging scenarios. *Radiographics*. 2018;38(5):1337–1350. doi:10.1148/rg.2018180017.
- Carter BW, Lichtenberger JP, Benveniste MK, et al. Revisions to the TNM staging of lung cancer: Rationale, significance, and clinical application. *RadioGraphics*. 2018; 38:374–391.
- Ceriani E, Combes C, Le Gal G, et al. Clinical prediction rules for pulmonary embolism: a systematic review and meta-analysis. *J Thromb Hemost*. 2010; 8(5):957–970. doi: 10.1111/j.1538-7836.2010.03801.x.
- Corrigan D, Prucnal C, Kabrhel C. Pulmonary embolism: The diagnosis, risk stratification, treatment and disposition of emergency department patients. *Clin Exp Emerg Med*. 2016 Sep; 3(3):117–125.
- Cohen R, Mena D, Carbajal-Mendoza R, et al. Superior vena CVA syndrome: A medical emergency? *Int J Angiol*. 2008; 17(1):43–46. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2728369/pdf/ija17043.pdf>.
- De Koning HJ, Meza R, Plevritis SK, et al. Benefits and harms of computed tomography lung cancer screening strategies: A comparative modeling study for the U.S. Preventative Services Task Force. *Ann Int Med*. March 4, 2014; 160(5):311–320. doi: 10.7326/M13-2316.
- Dean NC, Griffith PP, Sorensen JS, et al. Pleural effusions at first ED encounter predict worse clinical outcomes in patients with pneumonia. *Chest*. 2016; 149(6):1509.

Dogan DO, Berk S, Gumus C, et al. A longitudinal study on lung disease in dental technicians: What has changed after seven years? *Int J Occup Med Environ Health*. 2013; 26:693–701.

Dyer DS, Khan AR, Mohammed TL. ACR Appropriateness Criteria on chronic dyspnea: Suspected pulmonary origin. *J Thorac Imaging*. 2010 May; 25(2):W21–3.

Erbel R, Aboyans V, Boileau C, et al. 2014 ESC Guidelines on the diagnosis and treatment of aortic diseases: Document covering acute and chronic aortic diseases of the thoracic and abdominal aorta of the adult. The Task Force for the Diagnosis and Treatment of Aortic Diseases of the European Society of Cardiology (ESC). *Eur Heart J*. 2014; 35(41):2873. Epub 2014 Aug 29.

Ferreira TdA, Chagas ISS, Ramos RTT, et al. Congenital thoracic malformations in pediatric patients: Two decades of experience. *J Bras Pneumol*. 2015 Mar–Apr; 41(2):196–199.

Friedman T, Quencer KB, Kishore SA, et al. Malignant venous obstruction: Superior vena cava syndrome and beyond. *Semin Intervent Radiol*. 2017; 34(4):398. Epub 2017 Dec 14.

Greco FA, Oien K, Erlander M, et al. Cancer of unknown primary: Progress in the search for improved and rapid diagnosis leading toward upper patient outcomes. *Ann Oncol*. 2012; 23:298–304.

Hannuksela M, Stattin EL, Johansson B, et al. Screening for familial thoracic aortic aneurysms with aortic imaging does not detect all potential carriers of the disease. *Aorta (Stamford)*. 2015 Feb; 3(1):1–8.

Hiratzka LF, Bakris GL, Beckman JA, et al. 2010 ACCF / AHA / AATS / ACR / ASA / SCA / SCAI / SIR / STS / SVM guidelines for the diagnosis and management of patients with Thoracic Aortic Disease: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines, American Association for Thoracic Surgery, American College of Radiology, American Stroke Association, Society of Cardiovascular Anesthesiologists, Society for Cardiovascular Angiography and Interventions, Society of Interventional Radiology, Society of Thoracic Surgeons, and Society for Vascular Medicine. *Circulation*. 2010; 121(13):e266.

Hong SJ, Kim TJ, Nam KB, et al. New TNM staging system for esophageal cancer: What chest radiologists need to know. *RadioGraphics*. 2014; 34(6).

Kalemkerian GP, Akerley W, Bogner P, et al. Small Cell Lung Cancer—NCCN Clinical Practice Guidelines in Oncology. February 2013; 1–48.
http://www.nccn.org/professionals/physician_gls/pdf/sclc.pdf.

Ketai LH, Mohammed TL, Kirsch J, et al. ACR Appropriateness Criteria® Hemoptysis. *J Thorac Imaging*. 2014 May; 29(3):W19–22.

Khan KA, Nardelli P, Jaeger A, et al. Navigational bronchoscopy for early lung cancer: A road to therapy. *Adv Ther*. 2016; 33:580–596.

Ko Y, Lee HY, Park YB, et al. Correlation of microbiological yield with radiographic activity on chest computed tomography in cases of suspected pulmonary tuberculosis. *PloS One*. 2018 Aug 9; 13(8):e0201748.

Konstantinides SV, Torbicki A, Agnelli G, et al. 2014 ESC Guidelines on the diagnosis and management of acute pulmonary embolism: The Task Force for the Diagnosis and Management of Acute Pulmonary Embolism of the European Society of Cardiology (ESC). *Eur Heart J*. 2014 Nov 14; 35(43):3033–80.

Kovalchik SA, Tammemagi M, Berg CD, et al. Targeting of low-dose CT screening according to the risk of lung cancer death. *NEJM*. July 2013; 369(3):245–54. doi: 10.1056/NEJMoa1301851.

Kumar R. Myasthenia gravis and thymic neoplasms: A brief review. *World J Clin Cases*. 2015 Dec 16; 3(12):980–83.

Latief KH, White CS, Protopapas Z, et al. Search for a primary lung neoplasm in patients with brain metastasis: Is the chest radiograph sufficient? *AJR Am J Roentgenol*. 1997; 168:1339–44.

Lee SC, Jain PA, Jethwa SC, et al. Radiologist's role in breast cancer staging: Providing key information for clinicians. *RadioGraphics*. 2014; 34(2).

Li J, Li C, Li J. Thoracic manifestation of Wegener's granulomatosis: Computed tomography findings and analysis of misdiagnosis. *Exp Ther Med*. 2018 Jul; 16(1):413–419.

Little BP, Gilman MD, Humphrey KL, et al. Outcome of recommendations for radiographic follow-up of pneumonia on outpatient chest radiography. *AJR*. 2014; 202:54–59.

Loverdos K, Fotiadis A, Kontogianni C, et al. Lung nodules: A comprehensive review on current approach and management. *Ann Thorac Med*. 2019 Oct-Dec; 14(4):226–238.

MacMahon H, Naidich DP, Goo JM, et al. Guidelines for management of incidental pulmonary nodules detected on CT images: From the Fleischner Society 2017. *Radiology*. 2017 July; 284(1):228–243. Epub 2017 Feb 23. doi: 10.1148/radiol.2017161659.

Mazzone PJ, Silvestri GA, Patel S, et al. Screening for lung cancer CHEST guideline and expert panel report. *CHEST*. 2018; 153(4):954–985.

Melamed KH, Fereidoun AF, Barjakterevic I, et al. Diagnostic value of quantitative chest CT in a case of spontaneous pneumothorax. *Chest*. 2017; 152(5):e109–114.

Miller A, Warshaw R, Nezamis J. Diffusing capacity and forced vital capacity in 5,003 asbestos-exposed workers: Relationships to interstitial fibrosis (ILO profusion score) and pleural thickening. *Am J Ind Med*. 2013; 56:1383–93.

Mullan CP, Madan R, Trotman-Dickenson B, et al. Radiology of chest wall masses. *AJR*. 2011; 197(3).

National Comprehensive Cancer Network (NCCN). NCCN Imaging Guidelines. 2019. <https://www.nccn.org/store/login/login.aspx?ReturnURL=/professionals/imaging/content>.

Nishino M, Itoh H, Hatabu H. A practical approach to high-resolution CT of diffuse lung disease. *Eur J Radiol*. 2014; 83(1):6–19.

Paquette CM, Manos DC, Psooy BJ. Unilateral vocal cord paralysis: A review of CT findings, mediastinal causes, and the course of the recurrent laryngeal nerves. *RadioGraphics*. 2012; 32(3).

Pascall E, Tulloh RMR. Pulmonary hypertension in congenital heart disease. *Future Cardiol*. 2018 Jul; 14(4):343–353.

Pratter MR, Abouzgheib W, Akers S, et al. An algorithmic approach to chronic dyspnea. *Respir Med*. 2011; 105:1014–21.

Proulx AM, Zryd TW. Costochondritis: Diagnosis and treatment. *Am Fam Physician*. 2009; 80(6):617–620.

Pynnonen MA, Gillespie MB, Roman B, et al. Clinical practice guideline: Evaluation of the neck mass in adults. *Otolaryngol Head Neck Surg*. 2017; 157(2 Suppl):S1.

Rubin GD, Ryerson CJ, Haramati LB, et al. The Role of Chest Imaging in Patient Management during the COVID-19 Pandemic: A Multinational Consensus Statement from the Fleischner Society. *Radiology* 2020 July; 296(1):172–180.

~~Singh B, Mommer SK, Erwin PJ, et al. Pulmonary embolism rule-out criteria (PERC) in pulmonary embolism—revisited: A systematic review and meta-analysis. *Emerg Med J*. 2013 Sep; 30(9):701-6. doi: 10.1136/emered-2012-201730. Epub 2012 Oct 4.~~

~~Tsao YC, Liu SH, Tzeng IS, et al. Do sanitary ceramic workers have a worse presentation of chest radiographs or pulmonary function tests than other ceramic workers? *J Formos Med Assoc*. 2017; 116:139-44.~~

~~Turner RD, Bothamley GH. Chronic cough and a normal chest X-ray—a simple systematic approach to exclude common causes before referral to secondary care: a retrospective cohort study. *NPJ Prim Care Respir Med*. 2016; 26:15081.~~

~~U.S. Preventive Services Task Force (USPSTF). Lung Cancer: Screening. Final recommendation statement, March 9, 2021.
<https://uspreventiveservicestaskforce.org/uspstf/recommendation/lung-cancer-screening>.~~

~~Vij R, Strek ME. Diagnosis and treatment of connective tissue disease associated interstitial lung disease. *Chest*. 2013; 143(3):814.~~

~~Winzenberg T, Jones G, Callisaya M. Musculoskeletal chest wall pain. *Aust Fam Physician*. 2015 Aug; 44(8):540-4.~~

~~Wood DE, Eapen GA, Ettinger DS, et al. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines™). *National Comprehensive Cancer Network*. 2012; 10:240-265.
<http://www.nccn.org/content/10/2/240.full.pdf+html>.~~

~~Yang C, Liu R, Ming X, et al. Thoracic organ doses and cancer risk from low pitch helical 4-dimensional computed tomography scans. *Biomed Res Int*. 2018 Sep 24; 2018:8927290. doi: 10.1155/2018/8927290. eCollection 2018.~~

~~Yankelevitz DF, Smith JP. Understanding the core result of the National Lung Screening Trial. *NEJM*. May 2013; 368(18):1757. doi: 10.1056/NEJMc1213744.~~

~~Yoo S, Lee MH, White C. MDCT evaluation of acute aortic syndrome. *Radiol Clin North Am*. 2010; 48(1):67-83. doi: 10.1016/j.rcl.2009.09.006.~~

Reviewed / Approved by NIA Clinical Guideline Committee

GENERAL INFORMATION

It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. If applicable: All prior relevant imaging results and the reason that alternative imaging cannot be performed must be included in the documentation submitted.

Disclaimer: Magellan Healthcare service authorization policies do not constitute medical advice and are not intended to govern or otherwise influence the practice of medicine. These policies are not meant to supplant your normal procedures, evaluation, diagnosis, treatment and/or care plans for your patients. Your professional judgement must be exercised and followed in all respects with regard to the treatment and care of your patients. These policies apply to all Magellan Healthcare subsidiaries including, but not limited to, National Imaging Associates (“Magellan”). The policies constitute only the reimbursement and coverage guidelines of Magellan. Coverage for services varies for individual members in accordance with the terms and conditions of applicable Certificates of Coverage, Summary Plan Descriptions, or contracts with governing regulatory agencies. Magellan reserves the right to review and update the guidelines at its sole discretion. Notice of such changes, if necessary, shall be provided in accordance with the terms and conditions of provider agreements and any applicable laws or regulations.

1. Final Recommendation Statement Lung Cancer: Screening U.S. Preventive Services Task Force (USPSTF). Updated March 9, 2021. Accessed November 16, 2021.
<https://uspreventiveservicestaskforce.org/uspstf/recommendation/lung-cancer-screening>
2. Wood DE, Eapen GA, Ettinger DS, et al. Lung cancer screening. *J Natl Compr Canc Netw*. Feb 2012;10(2):240-65. doi:10.6004/jnccn.2012.0022
3. McKee BJ, Regis SM, McKee AB, Flacke S, Wald C. Performance of ACR Lung-RADS in a clinical CT lung screening program. *J Am Coll Radiol*. Mar 2015;12(3):273-6. doi:10.1016/j.jacr.2014.08.004
4. Pinsky PF, Gierada DS, Black W, et al. Performance of Lung-RADS in the National Lung Screening Trial: a retrospective assessment. *Ann Intern Med*. Apr 7 2015;162(7):485-91. doi:10.7326/m14-2086
5. Lung-RADS® Version 1.1. American College of Radiology (ACR). Updated 2019. Accessed November 16, 2021. <https://www.acr.org/-/media/ACR/Files/RADS/Lung-RADS/LungRADSAssessmentCategoriesv1-1.pdf>
6. Bueno J, Landeras L, Chung JH. Updated Fleischner Society Guidelines for Managing Incidental Pulmonary Nodules: Common Questions and Challenging Scenarios. *Radiographics*. Sep-Oct 2018;38(5):1337-1350. doi:10.1148/rg.2018180017
7. Carter BW, Lichtenberger JP, 3rd, Benveniste MK, et al. Revisions to the TNM Staging of Lung Cancer: Rationale, Significance, and Clinical Application. *Radiographics*. Mar-Apr 2018;38(2):374-391. doi:10.1148/rg.2018170081
8. Hong SJ, Kim TJ, Nam KB, et al. New TNM staging system for esophageal cancer: what chest radiologists need to know. *Radiographics*. Oct 2014;34(6):1722-40. doi:10.1148/rg.346130079
9. Lee SC, Jain PA, Jethwa SC, Tripathy D, Yamashita MW. Radiologist's role in breast cancer staging: providing key information for clinicians. *Radiographics*. Mar-Apr 2014;34(2):330-42. doi:10.1148/rg.342135071
10. NCCN Imaging Appropriate Use Criteria™. National Comprehensive Cancer Network (NCCN). Updated 2021. Accessed November 4, 2021.
<https://www.nccn.org/professionals/imaging/default.aspx>

11. Greco FA, Oien K, Erlander M, et al. Cancer of unknown primary: progress in the search for improved and rapid diagnosis leading toward superior patient outcomes. *Ann Oncol*. Feb 2012;23(2):298-304. doi:10.1093/annonc/mdr306
12. Mullan CP, Madan R, Trotman-Dickenson B, Qian X, Jacobson FL, Hunsaker A. Radiology of chest wall masses. *AJR Am J Roentgenol*. Sep 2011;197(3):W460-70. doi:10.2214/ajr.10.7259
13. Kumar R. Myasthenia gravis and thymic neoplasms: A brief review. *World J Clin Cases*. Dec 16 2015;3(12):980-3. doi:10.12998/wjcc.v3.i12.980
14. American College of Radiology. ACR Appropriateness Criteria® Occupational Lung Diseases. American College of Radiology. Updated 2019. Accessed November 16, 2021. <https://acsearch.acr.org/docs/3091680/Narrative/>
15. Vij R, Strek ME. Diagnosis and treatment of connective tissue disease-associated interstitial lung disease. *Chest*. Mar 2013;143(3):814-824. doi:10.1378/chest.12-0741
16. Antoniou KM, Margaritopoulos G, Economidou F, Siafakas NM. Pivotal clinical dilemmas in collagen vascular diseases associated with interstitial lung involvement. *Eur Respir J*. Apr 2009;33(4):882-96. doi:10.1183/09031936.00152607
17. ACR-STR Practice Parameter for the Performance of High-Resolution Computed Tomography (HRCT) of the Lungs in Adults. American College of Radiology (ACR). Updated 2020. Accessed November 16, 2021. <https://www.acr.org/-/media/ACR/Files/Practice-Parameters/HRCT-Lungs.pdf>
18. Turner RD, Bothamley GH. Chronic cough and a normal chest X-ray - a simple systematic approach to exclude common causes before referral to secondary care: a retrospective cohort study. *NPJ Prim Care Respir Med*. Mar 3 2016;26:15081. doi:10.1038/nnpjcrm.2015.81
19. Ko Y, Lee HY, Park YB, et al. Correlation of microbiological yield with radiographic activity on chest computed tomography in cases of suspected pulmonary tuberculosis. *PLoS One*. 2018;13(8):e0201748. doi:10.1371/journal.pone.0201748
20. Dean NC, Griffith PP, Sorensen JS, McCauley L, Jones BE, Lee YC. Pleural Effusions at First ED Encounter Predict Worse Clinical Outcomes in Patients With Pneumonia. *Chest*. Jun 2016;149(6):1509-15. doi:10.1016/j.chest.2015.12.027
21. Bryl B, Barlow E, Davies H. P182 Follow up chest X-rays (CXR) after community acquired pneumonia (CAP): are they done and are they useful? *Thorax*. 2018;73(Suppl 4):A199-A200. doi:10.1136/thorax-2018-212555.339
22. Little BP, Gilman MD, Humphrey KL, et al. Outcome of recommendations for radiographic follow-up of pneumonia on outpatient chest radiography. *AJR Am J Roentgenol*. Jan 2014;202(1):54-9. doi:10.2214/ajr.13.10888
23. Melamed KH, Abtin F, Barjaktarevic I, Cooper CB. Diagnostic Value of Quantitative Chest CT Scan in a Case of Spontaneous Pneumothorax. *Chest*. Nov 2017;152(5):e109-e114. doi:10.1016/j.chest.2017.07.013
24. Paquette CM, Manos DC, Psooy BJ. Unilateral vocal cord paralysis: a review of CT findings, mediastinal causes, and the course of the recurrent laryngeal nerves. *Radiographics*. May-Jun 2012;32(3):721-40. doi:10.1148/rg.323115129
25. Li J, Li C, Li J. Thoracic manifestation of Wegener's granulomatosis: Computed tomography findings and analysis of misdiagnosis. *Exp Ther Med*. Jul 2018;16(1):413-419. doi:10.3892/etm.2018.6154

26. Kirsch J, Brown RKJ, Henry TS, et al. ACR Appropriateness Criteria[®] Acute Chest Pain-Suspected Pulmonary Embolism. *J Am Coll Radiol*. May 2017;14(5s):S2-s12. doi:10.1016/j.jacr.2017.02.027
27. Ferreira Tda A, Chagas IS, Ramos RT, Souza EL. Congenital thoracic malformations in pediatric patients: two decades of experience. *J Bras Pneumol*. Mar-Apr 2015;41(2):196-9. doi:10.1590/s1806-37132015000004374
28. Pascall E, Tulloh RM. Pulmonary hypertension in congenital heart disease. *Future Cardiol*. Jul 2018;14(4):343-353. doi:10.2217/fca-2017-0065
29. American College of Radiology. ACR Appropriateness Criteria[®] Hemoptysis. American College of Radiology (ACR). Updated 2019. Accessed November 16, 2021. <https://acsearch.acr.org/docs/69449/Narrative/>
30. Ketai LH, Mohammed TL, Kirsch J, et al. ACR appropriateness criteria[®] hemoptysis. *J Thorac Imaging*. May 2014;29(3):W19-22. doi:10.1097/rti.0000000000000084
31. Khan KA, Nardelli P, Jaeger A, O'Shea C, Cantillon-Murphy P, Kennedy MP. Navigational Bronchoscopy for Early Lung Cancer: A Road to Therapy. *Adv Ther*. Apr 2016;33(4):580-96. doi:10.1007/s12325-016-0319-4
32. Winzenberg T, Jones G, Callisaya M. Musculoskeletal chest wall pain. *Aust Fam Physician*. Aug 2015;44(8):540-4.
33. Rubin GD, Ryerson CJ, Haramati LB, et al. The Role of Chest Imaging in Patient Management during the COVID-19 Pandemic: A Multinational Consensus Statement from the Fleischner Society. *Radiology*. Jul 2020;296(1):172-180. doi:10.1148/radiol.2020201365
34. Erbel R, Aboyans V, Boileau C, et al. 2014 ESC Guidelines on the diagnosis and treatment of aortic diseases: Document covering acute and chronic aortic diseases of the thoracic and abdominal aorta of the adult. The Task Force for the Diagnosis and Treatment of Aortic Diseases of the European Society of Cardiology (ESC). *Eur Heart J*. Nov 1 2014;35(41):2873-926. doi:10.1093/eurheartj/ehu281
35. Hannuksela M, Stattin EL, Johansson B, Carlberg B. Screening for Familial Thoracic Aortic Aneurysms with Aortic Imaging Does Not Detect All Potential Carriers of the Disease. *Aorta (Stamford)*. Feb 2015;3(1):1-8. doi:10.12945/j.aorta.2015.14-052
36. Hiratzka LF, Bakris GL, Beckman JA, et al. 2010 ACCF/AHA/AATS/ACR/ASA/SCA/SCAI/SIR/STS/SVM guidelines for the diagnosis and management of patients with Thoracic Aortic Disease: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines, American Association for Thoracic Surgery, American College of Radiology, American Stroke Association, Society of Cardiovascular Anesthesiologists, Society for Cardiovascular Angiography and Interventions, Society of Interventional Radiology, Society of Thoracic Surgeons, and Society for Vascular Medicine. *Circulation*. Apr 6 2010;121(13):e266-369. doi:10.1161/CIR.0b013e3181d4739e
37. Proulx AM, Zryd TW. Costochondritis: diagnosis and treatment. *Am Fam Physician*. Sep 15 2009;80(6):617-20.
38. American College of Radiology. ACR Appropriateness Criteria[®] Rib Fractures. American College of Radiology. Updated 2018. Accessed November 19, 2021. <https://acsearch.acr.org/docs/69450/Narrative/>

39. American College of Radiology. ACR Appropriateness Criteria® Imaging of Possible Tuberculosis. American College of Radiology (ACR). Updated 2016. Accessed November 19, 2021. <https://acsearch.acr.org/docs/3099187/Narrative/>
40. Loverdos K, Fotiadis A, Kontogianni C, Iliopoulou M, Gaga M. Lung nodules: A comprehensive review on current approach and management. *Ann Thorac Med*. Oct-Dec 2019;14(4):226-238. doi:10.4103/atm.ATM_110_19
41. ACR Recommendations for the use of Chest Radiography and Computed Tomography (CT) for Suspected COVID-19 Infection. American College of Radiology (ACR). Updated March 22, 2020. Accessed February 21, 2022. <https://www.acr.org/Advocacy-and-Economics/ACR-Position-Statements/Recommendations-for-Chest-Radiography-and-CT-for-Suspected-COVID19-Infection>
42. Zhao W, Zhong Z, Xie X, Yu Q, Liu J. Relation Between Chest CT Findings and Clinical Conditions of Coronavirus Disease (COVID-19) Pneumonia: A Multicenter Study. *AJR Am J Roentgenol*. 2020/05/01 2020;214(5):1072-1077. doi:10.2214/AJR.20.22976
43. Pan F, Ye T, Sun P, et al. Time Course of Lung Changes at Chest CT during Recovery from Coronavirus Disease 2019 (COVID-19). *Radiology*. Jun 2020;295(3):715-721. doi:10.1148/radiol.2020200370
44. Bai HX, Hsieh B, Xiong Z, et al. Performance of Radiologists in Differentiating COVID-19 from Non-COVID-19 Viral Pneumonia at Chest CT. *Radiology*. Aug 2020;296(2):E46-e54. doi:10.1148/radiol.2020200823
45. Xie X, Zhong Z, Zhao W, Zheng C, Wang F, Liu J. Chest CT for Typical Coronavirus Disease 2019 (COVID-19) Pneumonia: Relationship to Negative RT-PCR Testing. *Radiology*. Aug 2020;296(2):E41-e45. doi:10.1148/radiol.2020200343
46. Interim Clinical Guidance for Management of Patients with Confirmed Coronavirus Disease (COVID-19). Centers for Disease Control & Prevention (CDC). Updated February 16, 2021. Accessed February 21, 2022. <https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-guidance-management-patients.html>
47. Ileri C, Dogan Z, Ozben B, et al. Evaluation of the relation between cardiac biomarkers and thorax computed tomography findings in COVID-19 patients. *Biomark Med*. Mar 2021;15(4):285-293. doi:10.2217/bmm-2020-0388
48. De Smet K, De Smet D, Ryckaert T, et al. Diagnostic Performance of Chest CT for SARS-CoV-2 Infection in Individuals with or without COVID-19 Symptoms. *Radiology*. Jan 2021;298(1):E30-e37. doi:10.1148/radiol.2020202708
49. Post-COVID Conditions. Centers for Disease Control & Prevention (CDC). Updated September 16, 2021. Accessed February 21, 2022. <https://www.cdc.gov/coronavirus/2019-ncov/long-term-effects/index.html>

ADDITIONAL RESOURCES

1. American College of Chest Physicians. Screening for Lung Cancer: CHEST Guideline and Expert Panel Report. American College of Chest Physicians (ACCP). Updated 2017. Accessed November 19, 2021. <http://info.chestnet.org/screening-for-lung-cancer-chest-guideline-and-expert-panel-report>

2. Barman M. Acute aortic dissection. *ESC e-J Cardio Pract.* 2014;12(25):02Jul2014. doi:<https://www.escardio.org/Journals/E-Journal-of-Cardiology-Practice/Volume-12/Acute-aortic-dissection>
3. Ceriani E, Combescure C, Le Gal G, et al. Clinical prediction rules for pulmonary embolism: a systematic review and meta-analysis. *J Thromb Haemost.* May 2010;8(5):957-70. doi:[10.1111/j.1538-7836.2010.03801.x](https://doi.org/10.1111/j.1538-7836.2010.03801.x)
4. Corrigan D, Prucnal C, Kabrhel C. Pulmonary embolism: the diagnosis, risk-stratification, treatment and disposition of emergency department patients. *Clin Exp Emerg Med.* Sep 2016;3(3):117-125. doi:[10.15441/ceem.16.146](https://doi.org/10.15441/ceem.16.146)
5. Cohen R, Mena D, Carbajal-Mendoza R, Matos N, Karki N. Superior vena cava syndrome: A medical emergency? *Int J Angiol.* Spring 2008;17(1):43-6. doi:[10.1055/s-0031-1278280](https://doi.org/10.1055/s-0031-1278280)
6. de Koning HJ, Meza R, Plevritis SK, et al. Benefits and harms of computed tomography lung cancer screening strategies: a comparative modeling study for the U.S. Preventive Services Task Force. *Ann Intern Med.* Mar 4 2014;160(5):311-20. doi:[10.7326/m13-2316](https://doi.org/10.7326/m13-2316)
7. Dogan D, Berk S, Gumus C, Ozdemir AK, Akkurt I. A longitudinal study on lung disease in dental technicians: what has changed after seven years? *Int J Occup Med Environ Health.* Oct 2013;26(5):693-701. doi:[10.2478/s13382-013-0140-0](https://doi.org/10.2478/s13382-013-0140-0)
8. Dyer DS, Khan AR, Mohammed TL, et al. ACR Appropriateness Criteria on chronic dyspnea: suspected pulmonary origin. *J Thorac Imaging.* May 2010;25(2):W21-3. doi:[10.1097/RTI.0b013e3181d9cce4](https://doi.org/10.1097/RTI.0b013e3181d9cce4)
9. Friedman T, Quencer KB, Kishore SA, Winokur RS, Madoff DC. Malignant Venous Obstruction: Superior Vena Cava Syndrome and Beyond. *Semin Intervent Radiol.* Dec 2017;34(4):398-408. doi:[10.1055/s-0037-1608863](https://doi.org/10.1055/s-0037-1608863)
10. Kalemkerian GP, Akerley W, Bogner P, et al. Small cell lung cancer. *J Natl Compr Canc Netw.* Jan 1 2013;11(1):78-98. doi:[10.6004/jnccn.2013.0011](https://doi.org/10.6004/jnccn.2013.0011)
11. Konstantinides SV, Torbicki A, Agnelli G, et al. 2014 ESC guidelines on the diagnosis and management of acute pulmonary embolism. *Eur Heart J.* Nov 14 2014;35(43):3033-69, 3069a-3069k. doi:[10.1093/eurheartj/ehu283](https://doi.org/10.1093/eurheartj/ehu283)
12. Kovalchik SA, Tammemagi M, Berg CD, et al. Targeting of low-dose CT screening according to the risk of lung-cancer death. *N Engl J Med.* Jul 18 2013;369(3):245-254. doi:[10.1056/NEJMoa1301851](https://doi.org/10.1056/NEJMoa1301851)
13. Latief KH, White CS, Protopapas Z, Attar S, Krasna MJ. Search for a primary lung neoplasm in patients with brain metastasis: is the chest radiograph sufficient? *AJR Am J Roentgenol.* May 1997;168(5):1339-44. doi:[10.2214/ajr.168.5.9129439](https://doi.org/10.2214/ajr.168.5.9129439)
14. MacMahon H, Naidich DP, Goo JM, et al. Guidelines for Management of Incidental Pulmonary Nodules Detected on CT Images: From the Fleischner Society 2017. *Radiology.* Jul 2017;284(1):228-243. doi:[10.1148/radiol.2017161659](https://doi.org/10.1148/radiol.2017161659)
15. Mazzone PJ, Silvestri GA, Patel S, et al. Screening for Lung Cancer: CHEST Guideline and Expert Panel Report. *Chest.* Apr 2018;153(4):954-985. doi:[10.1016/j.chest.2018.01.016](https://doi.org/10.1016/j.chest.2018.01.016)
16. Miller A, Warshaw R, Nezamis J. Diffusing capacity and forced vital capacity in 5,003 asbestos-exposed workers: relationships to interstitial fibrosis (ILO profusion score) and pleural thickening. *Am J Ind Med.* Dec 2013;56(12):1383-93. doi:[10.1002/ajim.22239](https://doi.org/10.1002/ajim.22239)
17. Nishino M, Itoh H, Hatabu H. A practical approach to high-resolution CT of diffuse lung disease. *Eur J Radiol.* Jan 2014;83(1):6-19. doi:[10.1016/j.ejrad.2012.12.028](https://doi.org/10.1016/j.ejrad.2012.12.028)

18. Pratter MR, Abouzgheib W, Akers S, Kass J, Bartter T. An algorithmic approach to chronic dyspnea. *Respir Med*. Jul 2011;105(7):1014-21. doi:10.1016/j.rmed.2010.12.009
19. Pynnonen MA, Gillespie MB, Roman B, et al. Clinical Practice Guideline: Evaluation of the Neck Mass in Adults. *Otolaryngol Head Neck Surg*. Sep 2017;157(2 suppl):S1-s30. doi:10.1177/0194599817722550
20. Singh B, Mommer SK, Erwin PJ, Mascarenhas SS, Parsaik AK. Pulmonary embolism rule-out criteria (PERC) in pulmonary embolism--revisited: a systematic review and meta-analysis. *Emerg Med J*. Sep 2013;30(9):701-6. doi:10.1136/emmermed-2012-201730
21. Tsao YC, Liu SH, Tzeng IS, Hsieh TH, Chen JY, Luo JJ. Do sanitary ceramic workers have a worse presentation of chest radiographs or pulmonary function tests than other ceramic workers? *J Formos Med Assoc*. Mar 2017;116(3):139-144. doi:10.1016/j.jfma.2016.10.017
22. Yang C, Liu R, Ming X, Liu N, Guan Y, Feng Y. Thoracic Organ Doses and Cancer Risk from Low Pitch Helical 4-Dimensional Computed Tomography Scans. *Biomed Res Int*. 2018;2018:8927290. doi:10.1155/2018/8927290
23. Yankelevitz DF, Smith JP. Understanding the core result of the National Lung Screening Trial. *N Engl J Med*. Apr 11 2013;368(15):1460-1. doi:10.1056/NEJMc1213744
24. Yoo SM, Lee HY, White CS. MDCT evaluation of acute aortic syndrome. *Radiol Clin North Am*. Jan 2010;48(1):67-83. doi:10.1016/j.rcl.2009.09.006

Reviewed / Approved by NIA Clinical Guideline Committee

GENERAL INFORMATION

It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. If applicable: All prior relevant imaging results and the reason that alternative imaging cannot be performed must be included in the documentation submitted.

Disclaimer: Magellan Healthcare service authorization policies do not constitute medical advice and are not intended to govern or otherwise influence the practice of medicine. These policies are not meant to supplant your normal procedures, evaluation, diagnosis, treatment and/or care plans for your patients. Your professional judgement must be exercised and followed in all respects with regard to the treatment and care of your patients. These policies apply to all Magellan Healthcare subsidiaries including, but not limited to, National Imaging Associates (“Magellan”). The policies constitute only the reimbursement and coverage guidelines of Magellan. Coverage for services varies for individual members in accordance with the terms and conditions of applicable Certificates of Coverage, Summary Plan Descriptions, or contracts with governing regulatory agencies. Magellan reserves the right to review and update the guidelines at its sole discretion. Notice of such changes, if necessary, shall be provided in accordance with the terms and conditions of provider agreements and any applicable laws or regulations.